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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,325	09/06/2000	Steven D. Nelson	14073US01	9079

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EXAMINER

CHAMBERS, TROY

ART UNIT	PAPER NUMBER
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3641

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/656,325

Applicant(s)

NELSON ET AL.

Examiner

Troy Chambers

Art Unit

3641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-13,22-34 and 38-87 is/are pending in the application.
- 4a) Of the above claim(s) 20,22-29 and 38-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4-13,31-34,62-64 and 66-87 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Election/Restrictions

1. This application contains claims drawn to an invention(s) nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the components of the initiator, bleed resistor, cable cutter, bolt cutter, rocket, missile, aircraft, spacecraft and crewed vehicle must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement

Art Unit: 3641

Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the components of each pyrotechnic device as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4, 5, 6, 10, 33, 34, 64, 66- 75, 80-87 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. 6584907 issued to Boucher. Boucher discloses initiators 16, 18, 20, 22, network bus 14, logic device (col. 6, ll. 7-17); coded signals (col. 5, ll. 58-65; col. 9, ll. 49-59); multiplexed signals (col. 11, ll. 33-37); energy reserve capacitor (col. 4, ll. 63-65); bleed resistor (col. 14, ll. 45-47); bus interface (col. 9, ll. 8-14); means for altering and transmitting (controller 12); logic device for storing activation energy (col. 13, ll. 39-51; col. 14, ll. 15-65); logic device for releasing stored energy after conditions met (col. 5, line 65 to col. 6, line 2); means for altering analog condition altering voltage level (col. 5, line 65 to col. 6, line 2); applicable to cable or bolt cutters (col. 3, ll. 43-52); avionics battery 17; device applicable to rockets/missiles (Fig. 1a), aerospace and aeronautical vehicles (col. 1, ll. 15-20; col. 3, ll. 35-42); the vehicles necessarily require crews for manufacturing, setup and launch.

Art Unit: 3641

6. Claims 1, 4, 5, 7, 8, 10, 11, 12 and 31 are rejected under 35 U.S.C. 102(b) and (e) as being anticipated by U.S. Patent No. 6166452 issued to Adams et al. ("Adams") and U.S. 5825098 issued to Darby. Adams discloses a plurality of igniters 10 connected to a networked electronic ordnance system via a bus controller (ECU). Darby discloses the details of the communication details of the ECU and the plurality of igniters. Both Darby and Adams qualify as prior art under a single rejection under 35 U.S.C. 102 because Adams incorporated Darby into its specification by reference. Darby discloses an electronic control unit 300 (bus controller) and a plurality of safety device controllers 200 used to operate igniters as disclosed by Adams. Controllers 200 comprise capacitors 240 that receive increased voltages from the converters 260. The devices are capable of detonating only when the proper voltage level is sensed (25 volts) and a unique signal is received. In previous responses, applicant has argued that claimed subject matter relating to the ability of a single command to address "any combination" of devices is patentable over the prior art. However, such language is functional in nature and describes the claimed device's method of operation. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). The prior art device of Adams/Darby merely has to have the capability to perform the recited function. Because applicant's bus controller (described as being a microprocessor, pg. 6, line 14) is the same as Darby's bus controller (also a

Art Unit: 3641

bus controller, col. 12, ll. 1-7), it is assumed that Darby's controller possesses the inherent capability of addressing the devices as claimed by the applicant.

7. With respect to claim 4, the applicant recites subject matter regarding the method of operation of the claimed ordnance system. Such a recitation does not limit the claims nor is it considered as a patentable limitation. In any event, the bus controller of Darby is the same as the bus controller claimed by the applicant and, therefore, is inherently capable of sending and receiving multiplexed digital signals. In any event, applicant has disclosed such capability as being well known (pg. 20, lines 20-22).

8. With respect to claims 5 and 8, Darby discloses energy reserve capacitors 240. Adams discloses capacitors 56, 62.

9. With respect to claim 7, refer to Figs. 2, 3 and 5 of Adams.

10. With respect to claim 10, Darby discloses bus interface 220.

11. With respect to claims 11 and 12, refer to Adams, col. 5, ll. 1-13 (serial and parallel communications).

12. With respect to claim 31 and 32, the subject matter claimed therein relates to the method of operation of the applicant's ordnance system. Hence, the limitations are not afforded patentable weight sufficient to overcome the cited prior art to Adams/Darby. In any event, the applicant's bus controller is equivalent to the bus controller of Adams (a microprocessor), so both are inherently capable of performing the same functions.

13. Claims 1, 4, 7, 10, 31, 32, 33, 34, 62, 63, 66 and 67 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. 6283227 issued to Lerche et al. ("Lerche"). Lerche discloses a downhole activation system that assigns and retrieves identifiers,

Art Unit: 3641

comprising: multiple control units 14A-14C; surface system 32 containing tool activation software (col. 2, ll. 48-62) for assigning an address to each control unit 14 (col. 1-15); a detonator including a capacitor 22, 302A-302C; a bus interface comprising a cable 20 and I/O circuit 20; each control unit is selectively accessible (col. 5, ll. 4-6; col. 6, lines 14-15 and 23-24); power is prevented from reaching control units 302A-302C prior to receipt of a coded command (col. 5, ll. 8-13); the surface system supplies a first voltage level which is used to activate the control units (col. 5, ll. 40-46) and a second voltage level for activation power (col. 6, ll. 28-31).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams/Darby or Lerche or Boucher in view of Jullian and in further view of U.S. Patent No. 5206455 issued to Williams. Adams/Darby and Jullian disclose a combined system as described above with the exception of the subject matter of claims 6 and 9. Williams discloses such subject matter including bleed resistors (col. 22, ll. 53-60). At the time of the invention, one of ordinary skill in the art would have found it obvious to provide the combined device of Adams/Darby and Jullian with the bleed resistor of Williams. The

Art Unit: 3641

suggestion/motivation for doing so would have been to provide an extra safety feature to bleed off current not intended to detonate the ignitors.

16. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lerche. Lerche disclose a downhole activation system as discussed above. However, it is not expressly stated whether the network is serial or parallel. However, it would have been obvious to one having ordinary skill in the art that the invention was made to use either a serial or parallel bus since the Examiner takes Official Notice of the equivalence of serial and parallel connections for the use in the electronic art and the selection of any of these known equivalents to connect a bus system would be within the level of ordinary skill in the art.

17. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams or Boucher or Lerche in view of U.S. Patent No. 6403887 issued to Kebabjian. Adams discloses a networked ordnance system as described above. However, Adams does not disclose the use of at least one shielded twisted pair cable. Kebabjian discloses a shielded twisted pair cable 10. At the time of the invention, one of ordinary skill in the art would have found it obvious to provide the network of Adams with the cable of Kebabjian. The suggestion/motivation for doing so would have been to prevent spurious noise and provide for high-speed communication.

18. Claims 62, 63 (Boucher and Adams/Darby) and 76-79 (Boucher) are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucher or Adams/Darby in view of Lerche. Boucher discloses a plurality of pyrotechnic devices and a bus controller system applicable to aerospace and aeronautical vehicles as discussed above.

Art Unit: 3641

Adams/Darby discloses a bus system useable in an automobile safety system as discussed above. However, neither Boucher nor Adams/Darby disclose, expressly, a bus controller programmed to automatically assign unique identifiers and capable of doing so each time the device is powered up. Lerche discloses such a feature as discussed above and at (col. 3, ll. 1-15). At the time of the invention, one having ordinary skill in the art would have found it obvious to provide the bus system of Boucher or Adams/Darby with the assigning capabilities of Lerche. The suggestion/motivation for doing so would have been to reduce manufacturing complexity and to be able to assign addresses on the fly.

Response to Arguments

19. Applicant's arguments filed 05/13/05 have been fully considered but they are not persuasive.

20. With respect to the drawing objection, the rules are clear in that all features of the claimed invention must be shown or removed from the claims. Therefore, the objection will be maintained.

21. With respect to the rejection of claim 1 as being anticipated by Adams and Darby, the Examiner has considered the prior art references, the arguments for patentability and the interview with the applicant's on 13 October 2004. In that interview, the Examiner agreed that an amendment to the claims (namely, the addition of the bus controller being "programmed" to selectively address with a single command) would define patentable subject matter. However, after consultation with other primary examiners, it was concluded that no patentable subject matter exists. The reasons are

Art Unit: 3641

as follows: Claim 1 requires, in part, a bus controller "programmed to selectively address, with a single command, one or more of said pyrotechnic devices". As the Examiner has stated in previous Office actions, the Darby/Adams device is at least capable of addressing one controller 200. The claims further requires, "whereby a single command can be used to address as few as one, as many as all, and any combination of the pyrotechnic devices that are connected to the network." However, this limitation merely recites "intended use". As provided by the MPEP:

APPARATUS CLAIMS MUST BE STRUCTU-RALLY DISTINGUISHABLE
FROM THE PRIOR ART

While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

MANNER OF OPERATING THE DEVICE DOES NOT DIFFERENTIATE
APPARATUS CLAIM FROM THE PRIOR ART

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (The preamble of claim 1 recited that the apparatus was "for mixing flowing developer material" and the body of the claim recited "means for mixing ..., said mixing means being stationary and completely submerged in the developer material". The claim was rejected over a reference which taught all the structural limitations of the claim for the intended use of mixing flowing developer. However, the mixer was only partially submerged in the developer material. The Board held that the amount of submersion is immaterial to the structure of the mixer and thus the claim was properly rejected.).

Case law provides:

Art Unit: 3641

A "whereby" clause, which is a statement of result, cannot, by itself, impart patentability to an apparatus claim. In re Boileau, 163 F.2d, 75 USPQ 88, 90, 91 (CCPA 1947).

A whereby clause that merely states the results of the limitations in a claim adds nothing to the patentability or the substance of the claim. Texas Instruments Inc. v. International Trade Commission, 988 F.2d USPQ.2d 1018, 1023 (Fed. Cir. 1993).

In the instant case, the applicant's "whereby" clause merely states a desired result unaccompanied by structural limitations.

With respect to the rejection of claim 4, applicant argues that the rejection should be withdrawn absent "basis in fact and/or technical reasoning". In response, the applicant argues that claim 4 merely describes a method of use. Hence, the cited prior art device merely has to be capable of performing the recited function.

With respect to the rejection of claims 31 and 32, refer to the argument above regarding the use of a "whereby" (or "wherein") clause that merely states an intended use or function.

22. Applicant's arguments with respect to claims 33, 34, 64, 66 and 67 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 3641

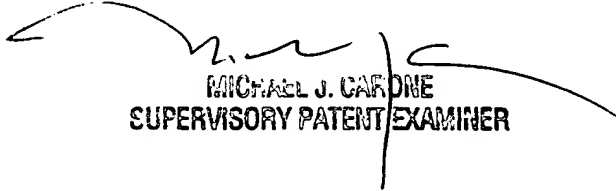
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Troy Chambers whose telephone number is (703) 308-5870. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone, can be reached at (703) 306-4198.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-4177. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-7687.

LC
6/15/05


MICHAEL J. CARONE
SUPERVISORY PATENT EXAMINER